

Keynote Address

Osteoporosis: Prevention and the Quality of Life for Older Americans

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AVERSE IN THE Old Testament begins with the words, 'O ye dry bones...' The dry bones alluded to are the loss of spiritual strength among the people of Israel. We at this conference are also concerned with dry bones and matters of the human spirit. For the bone-weakening disease of osteoporosis is the major cause of fractures in postmenopausal women and older persons, and the dispiriting consequence of this often results in them having to enter nursing homes in later life.

Osteoporosis is a major public health problem, affecting 24 million Americans. It afflicts 50 percent of the women in this country over 45 years of age, and 25 percent of the men.

Osteoporosis is the loss of bone mass that occurs with increasing age, making bones more susceptible to breaking under stress. It is the major cause of 1.3 million bone fractures every year. In 1983 alone, these fractures cost our economy \$6.1 billion in direct and indirect costs.

The National Center for Health Statistics (NCHS) reports that, in 1985, 40,200 persons were admitted to nursing homes with a primary diagnosis of osteoporosis. Monthly charges for each of them averaged \$1,628, according to the Center's National Nursing Home Survey.

The human costs of falls induced by osteoporosis is heavy. About 8,000 persons age 75 and older die within a year after falling, which is 60 percent of all the fatal injuries occurring in this age group. The human costs must also be measured in suffering, and loss of an older person's independence. By far the most severe threat to these elderly is the hip fracture,

which is associated with more deaths, disabilities, and medical expenses than all other osteoporotic fractures combined. The Center's survey shows that, in 1985, 62,200 persons in nursing homes had been admitted because of hip fractures, while those with all other fractures totaled 49,800. We cannot say how many fractures were the result of bones weakened by osteoporosis, but probably this is often, if not mostly, the case.

Persons who survive hip fractures often suffer permanent disability and dependency. Consider these costs:

- From 15 to 25 percent of them remain in long-term facilities for at least a year after their hip is fractured, suffering a loss in the quality of their lives, at a cost of about \$25,000 for every year spent in a nursing home.
- While 25 to 35 percent of hip fracture victims return home, they must then depend on other people, and sometimes special devices, to help them get about.

The problem of osteoporosis is not going to go away—in fact, it is going to get worse if we do not act. Between 1980 and 2050, the number of persons over age 65 will double—rising from 11 to 22 percent of the population. The number of persons in that frail and vulnerable age group—those over age 85—will increase from 1 to 5 percent. This is the age group most in need of nursing home care. Were we to make no progress in reducing the number of hip fractures, currently 210,000 per year, we can expect the number to double or triple by mid-century.

The graying of America will also affect the demand for health services. The cost of nursing home care alone will be 70 percent higher in 2026 than in 1986, because of changes in the age and sex makeup of our older population.

As costs rise, the question that will keep growing in importance is: Who will pay? In 1985 alone, unfunded health care benefits in the private sector were more than \$100 billion. And for government retirees it was \$25 billion. Public funding for health care is now approaching what many consider to be its outer limits—limits circumscribed both by deficit problems and by the fact that we will have relatively fewer workers paying into private and public health plans in the future.

Medicaid also faces problems. About half of

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Medicaid's outlay goes for long-term care, a circumstance that the architects of this program certainly never envisioned. Over the years, Medicaid has steadily taken on the role as the payer of last resort when, for example, a woman with a hip fracture has to go into a nursing home, and inevitably spends her personal assets down to the poverty level.

Nursing home care alone cost the nation \$38.6 billion in 1986, and this will increase. The NCHS estimates that the number of elderly nursing home residents will increase by more than 115 percent between 1978 and 2003.

The nation has a choice to make: It can continue, with great difficulty, using Medicaid and public funding as a primary source to finance long-term care. To do so, however, is to face intractable budgetary and perhaps political problems. Or it can—as this Administration and some in Congress advocate—look to the resources of the private sector to meet this growing need.

We are now studying the possibility of establishing an IRA-type savings plan to meet this need. And, at the behest of Congress, we recently completed a study, with the help of the insurance industry, that will help to lay the groundwork for marketing health policies that will cover long-term care. As a matter of fact, several insurance plans have already been marketed, and their outcome will be of great interest.

We need to do everything we can to keep health care costs down, but we want to achieve this without interfering with older Americans' access to quality health care. To me, a vital aspect of quality is what we can do to prevent conditions before they occur. This raises for this conference a natural question: are osteoporosis and its crippling effects preventable?

We are gathered at this conference to focus on this very question. To begin answering it, let us first look at the disease itself. It is important to note that we all lose bone mass with age—it is a normal part of the aging process. Yet only a small proportion of people actually suffer bone fractures because of this, which suggests something important—that the most harmful progression of osteoporosis may be preventable.

We are obviously not going to solve the problem by setting more bones. So we have to do it by teaching people what they must do to prevent osteoporosis in its damaging form, or, failing that, to make them aware of the hazards that lead to bone-breaking falls.

Evidence suggests that there are at least two distinct types of osteoporosis:

- Type I occurs in white females during the first few years after natural or surgically induced menopause. It occurs because of the postmenopausal deficiency of estrogen, a hormone that helps the body convert calcium to bone. From 5 to 10 percent of the female population suffers from Type I osteoporosis.
- Type II occurs in both sexes over 75 years of age. It afflicts 90 percent of the women, and 25 percent of the men, in this age group.

Prevention begins with a knowledge of the risk factors. For osteoporosis they are: being white, female, and thin; having a family history of the disease; having a low calcium intake; not getting adequate exercise; and taking certain drugs such as corticosteroids. Other risk factors are heavy cigarette smoking, which reduces estrogen production, and excessive alcohol intake.

Clearly, aging, the loss of sex hormones at menopause, and genetic heritage all factor into the risk profile. However, why some people get osteoporosis and others do not is not completely known at present.

We have much to learn. In February 1987, the National Institutes of Health held a workshop that brought together top researchers in the field of osteoporosis and bone metabolism. One researcher said that the most effective way to reduce postmenopausal bone loss is by replacing estrogen in postmenopausal women. Oral administration of these short-acting estrogen preparations reduced this kind of bone loss at virtually every body site. However, estrogen use may cause side effects, so the researcher recommended therapy only for women who are at high risk of osteoporosis and who have no contraindications, such as endometrial or breast cancer, stroke, or unexplained vaginal bleeding.

The issue of calcium intake was also addressed at that conference. Calcium is removed from bone if dietary calcium intake is too low. This is why a workgroup at that conference recommended that everyone consume at least 1,000 mg of calcium every day. Milk and other dairy products are the best sources, but green vegetables, beans, and grains are also good sources of calcium.

The group stated that increased calcium intake during the adolescent years results in a heavier and denser skeleton, which may protect against fractures later in life. However, some teenagers may not be getting enough calcium. A study conducted by the

U.S. Department of Agriculture found that teens tend to replace milk with soft drinks at their meals, and they do not eat enough vegetables. One way of getting around this problem is for homemakers to serve meals that contain low-fat dairy products that appeal to teenage tastes—like pizza, frozen yogurt desserts, and cottage cheese with fruit. Good diets should be supplemented by getting enough exercise, and avoiding the hazards of tobacco and alcohol.

Researchers at that workshop stated that early detection and treatment of osteoporosis may prevent some of the fractures that occur every year in this country, but they stopped short of recommending mass screening of the general population for this purpose. They recommended instead that high-risk individuals be screened for the disease, together with those who are already taking estrogen, as a way to monitor their treatment.

Controversy still surrounds the relationship between calcium intake and osteoporosis. We do not have the scientific evidence to say that a high calcium intake will prevent osteoporosis. A definitive answer to this question would be of value. Our researchers need answers to a number of questions that bear on this issue.

- We need to know more about basic bone biology, and how bones remodel themselves during a person's life.
- We need to know more about how the body absorbs and excretes calcium.
- We need to devise better screening methods to measure bone density.
- We need more data on the effect of exercise on bone.

This last point is particularly important, because surveys show that only about 40 percent of the adult population in this country now exercises regularly, and many of these are adults in their 30s and 40s.

Not enough older persons are getting the exercise they need to help them ward off osteoporosis. Exercise is an inexpensive way for older people to stay fit and healthy, and scientists believe that it may increase the strength of bone. We do know that prolonged immobility results in osteoporosis. We also know that patients confined to bed, and astronauts living under weightless conditions, lose up to 1 percent of their trabecular bone per week, while their deeper-lying cortical bone is lost at a slower rate. When these persons resume normal weight-bearing activity, both types of bone are gradually restored.

Some investigators believe that regular exercise may help older persons prevent falls, or at least help

them to protect themselves from injury when they do fall.

Finally, older people need to become more aware of common hazards around the home that cause falls. We need more information campaigns to alert them to obvious and correctable hazards such as loose rugs, steep stairs, poor lighting, unstable furniture, loose wires underfoot, and slippery or uneven walking surfaces.

This conference should convince us that osteoporosis is indeed a major and costly health problem in this country that commands our attention and our energies. Unless something can be done to prevent its development in older people, the cost of treating the fractures it causes will grow, simply because those who are most vulnerable belong to the fastest growing age segment of our population.

So we must look to ways of preventing osteoporosis, first of all, because this is the more cost-effective way, but also because once bone fractures have occurred, the person all too often loses mobility, and the capacity for independent living.

Osteoporotic fractures are, above all, human tragedies. And it falls to all of us—individuals, providers of care, and those in government—to do all we can to avert these tragedies. This is a joint and shared responsibility. We must pursue that responsibility in the face of incomplete knowledge about how to prevent osteoporosis. This fact must not stay our efforts; indeed, it should only cause us to redouble them, for we are Americans, and Americans are doers. We belong to a generation of Americans given to great ventures: we have reached into space, opened the atom, and learned to splice genes. Surely we cannot fail in that most sublime of human missions—the caring for each other that marks us all as the special creatures of God.

Solving the problems of aging, of which osteoporosis is but one, is a part of that undertaking, and should therefore challenge the best that is within us. Let us dedicate ourselves to that great mission at this conference, for that is the larger meaning of what brings us together here.